



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,596	08/22/2001	Michael Joseph Kemp	R346/7027	7171

23628 7590 03/28/2005

WOLF GREENFIELD & SACKS, PC  
FEDERAL RESERVE PLAZA  
600 ATLANTIC AVENUE  
BOSTON, MA 02210-2211

EXAMINER

JACOBSON, TONY M

ART UNIT PAPER NUMBER

2644

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/831,596	KEMP, MICHAEL JOSEPH	
	<b>Examiner</b>	<b>Art Unit</b>	
	Tony M Jacobson	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 27-40 and 43-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-40 and 43-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |



## **DETAILED ACTION**

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

1. The disclosure is objected to because of the following informalities: At page 1 of the specification, Applicant incorrectly refers to his prior (PCT) application as "WO98/0714" while the correct publication number seems to be "WO98/07141". Also, at page 16, line 8, "our" appears to be a typographical error for "or".

Appropriate correction is required.

2. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

***Allowable Subject Matter***

3. The indicated allowability of claims 27-40, 43, and 44 is withdrawn in view of the newly discovered reference(s) to Wilson (US 5,471,651), Kitamura (US 6,055,502), Bose et al. (US4,490,843), and/or technical rejections under 35 USC 101 and 112, as detailed below. Rejections based on the newly cited reference(s) follow.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 33, 44, 45, 48, and 50-53** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. **Claims 33, 44, 52, and 53** are directed to two classes of statutory subject matter. The claims attempt to embrace both an apparatus or machine and a process. This is precluded by the language of 35 U.S.C. 101, which sets forth the statutory classes of invention in the alternative only. While a single patent may include claims directed to more than one statutory class of invention, no basis exists for permitting a combination of two separate and distinct classes of invention in a single claim. The claiming of two statutory classes of invention in a single claim is ambiguous and renders the claim indefinite. Dependent **claim 33**, depends upon apparatus claim 32, but attempts to claim a method. **Claim 44** generally indicates an apparatus, but refers to the limitations as "steps" at line 2 of the claim. **Claim 52** is presented generally as a method claim, but recites in line 8 "wherein the apparatus further includes means for interpolating ...", without making any prior mention of any apparatus. Similarly, method **claim 53** recites "this apparatus further including a manual input ..." at line 8 of the claim.

7. **Claim 45** recites the limitation "the stored gain characteristics" in line 8 of the claim. There is insufficient antecedent basis for this limitation in the claim. The claim makes no prior mention of "stored" gain characteristics.

8. **Claim 48** recites the limitation "the impulse responses to be applied" in line 8 of the claim. There is insufficient antecedent basis for this limitation in the claim. The claim makes no prior mention of impulse responses.

9. **Claim 50** recites the limitations "the stored gain characteristic" in line 8, "the means for applying a gain characteristic" in lines 8-9, and "the means for applying a stored impulse response" in lines 9-10 of the claim. There is insufficient antecedent basis for these limitations in the claim.

10. **Claim 51** recites the limitation "when the amplitude of the input signal falls between the two gain characteristics" in lines 6-7 of the claim. There is insufficient antecedent basis for this limitation in the claim. No prior mention is made of "the two gain characteristics".

11. **Claim 52** recites the limitation "the apparatus" in line 8 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 2644

12. **Claim 53** recites the limitation "this apparatus" in line 8 of the claim. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 101***

13. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

14. **Claims 33, 44, 52, and 53** and are rejected under 35 U.S.C. 101 because the claimed invention is directed to two classes of statutory subject matter. The claims attempt to embrace both an apparatus or machine and a process. This is precluded by the language of 35 U.S.C. 101, which sets forth the statutory classes of invention in the alternative only. While a single patent may include claims directed to more than one statutory class of invention, no basis exists for permitting a combination of two separate and distinct classes of invention in a single claim. See explanation above under 35 USC 112, second paragraph.

***Claim Rejections - 35 USC § 102***

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

16. **Claims 27-40 and 43-54** are rejected under 35 U.S.C. 102(b) as being anticipated by Wilson (US 5,471,651).

17. Regarding **claims 32 and 51**, Wilson discloses an apparatus for applying a gain characteristic to an audio signal, comprising: means (inherent) for storing data representing a plurality of gain characteristics at a plurality of different levels (column 7, lines 17-22 disclose that the ideal gain calculator of the invention operates using a preset compression law [comprising a plurality of gain characteristics at a plurality of different levels, as broadly as claimed]; that preset compression law must inherently be stored, and means for storing it are thus also inherently present [e.g., a digital memory, or user-operated switches or controls, or fixed circuit elements, appropriately selected and arranged store the plurality of gain characteristics]); means (12, 14, and 16 of Fig.



Art Unit: 2644

3) for repeatedly assessing the amplitude of an input signal (column 6, lines 42-59); means (18 and 20 of Fig. 3) for determining a gain characteristic to be applied to the input signal (column 6, line 60 –column 7, line 2); and means (6 of Fig. 3) for applying the thus determined gain characteristic to the input signal (column 6, line 66 –column 7, line 2), wherein the means for storing gain characteristics comprises one impulse response (inherently, see below), and means (6 and 18 of Fig. 3) for applying a stored impulse response to the input signal. A gain characteristic, such as a particular gain level, inherently comprises an impulse response (an output produced in response to a unit-impulse input  $\delta(n)$ , where  $\delta(n)$  represents the well-known unit impulse function (A.K.A. unit sample sequence):  $\delta(n) = 1$  for  $n = 0$ , and  $\delta(n) = 0$  for  $n \neq 0$ , according to the common definition of an impulse response of a digital system of the type disclosed by Wilson); for instance, the impulse response  $h(n)$  of a system or subsystem applying a pure gain of "A" to an input signal is  $h(n) = A$ .

18. Regarding **claim 27**, in normal operation, the apparatus of Wilson clearly performs the method claimed, according to the description above with regard to claim 32.

19. Regarding **claims 29 and 34** and further regarding **claim 51**, as explained above with regard to claims 32 and 51, a single gain level constitutes a "gain characteristic", as broadly as claimed and disclosed, and also comprises an impulse response. Wilson discloses at column 7, lines 19-22 that "The input value of a signal at the present gain

setting is compared with a series of points for which the input/output relationship is defined. The ideal gain is found by interpolating the relationship between them." Thus, means are inherently present for interpolating between two or more impulse responses (gain levels) (when the amplitude of the input signal falls between two stored gain characteristics) before applying the interpolated response to the input signal and the method performed in normal operation comprises making an interpolation between two or more impulse responses and applying the result to the input signal.

20. Regarding **claims 28, 30, 33, and 35** and further regarding **claim 51**, Wilson discloses at column 8, lines 39-40 that the method (and thus the apparatus) includes a user-definable compression law; and at column 9, lines 16-19 that the apparatus may be provided with controls for changing some of the compression parameters, such as the compression law and the maximum rate of change of gain. Together, this clearly indicates a manual input for (used to select) a gain characteristic, and thus an impulse response, to be applied to an input signal.

21. Regarding **claim 37**, in normal operation, the apparatus of Wilson clearly performs the method claimed, according to the description above with regard to claims 32 and 33.

22. Regarding **claim 39**, as indicated above regarding claims 32 and 33, the apparatus of Kitamura comprises means for storing data representing a plurality of gain characteristics at a plurality of different levels; means for repeatedly assessing the amplitude of an input signal; means for determining a gain characteristic to be applied to the input signal in response to a manual input; and means for applying the thus determined gain characteristic to the input signal.

23. Regarding **claims 31, 36, 38, and 40**, because the apparatus of Wilson is an audio signal processor, it logically follows that the gain characteristic it applies to an input signal (its gain characteristic) necessarily corresponds to a gain characteristic of an audio signal processor.

24. Regarding **claims 43 and 44**, the term "reference device" may refer to anything devised or contrived that serves as a standard for measuring or constructing something, such as a prototype upon which a manufactured device is based, a theoretical device upon which a real device is based, or many other definitions. Applicant has not provided any basis, either in the claims or the specification, for determining a specific meaning for the term. The physical apparatus of Wilson is inherently based on a conceptual "reference device"; and because the apparatus is clearly intended to be produced in number, the produced apparatus is based on a prototype (another type of "reference device"). Thus, the stored data representing a plurality of impulse

Art Unit: 2644

responses, as described above regarding claim 30, can be said to relate to a plurality of characteristics of a "reference device", as broadly as claimed and disclosed; accordingly, these claims are rejected by the same reasoning applied to claims 30 and 35, above.

25. Regarding **claims 45, 47, 50, and 52**, because the limitations of these claims (or equivalent limitations in view of the references being applied) are all contained in claim 29, these claims are rejected by the same reasoning applied to claim 29, recited above.

26. Regarding **claims 46, 48, and 53**, because the limitations of these claims (or equivalent limitations in view of the references being applied) are all contained in claim 30, these claims are rejected by the same reasoning applied to claim 30, recited above.

27. Regarding **claims 49 and 54**, these (duplicate) claims are rejected by the same reasoning applied to claim 29, recited above, with the additional note that the gain characteristic applied by the apparatus of Wilson inherently corresponds to a gain characteristic of an audio processor, since the apparatus of Wilson is itself an audio processor.

28. **Claims 27-29, 31-34, 36-40, 44, 45, 47, 49-52, and 54** are rejected under 35 U.S.C. 102(e) as being anticipated by Kitamura (US 6,055,502).

29. Regarding **claim 32**, Kitamura discloses, generally, an apparatus for applying a gain characteristic to an audio signal, comprising: means (42 of Fig. 3, in turn comprising filter coefficient memory block 48) for storing data representing a plurality of gain characteristics at a plurality of different levels (column 4, line 63 –column 5, line 5); means for repeatedly assessing the amplitude of an input signal (inherently – see column 4, lines 45-50); means (also comprised in 42 of Fig. 3) for determining a gain characteristic to be applied to the input signal (column 5, lines 6-10); and means (50 of Fig. 3) for applying the thus determined gain characteristic to the input signal (column 6, line 65 –column 7, line 3), wherein the means for storing gain characteristics (42 of Fig. 3) comprises one impulse response (in filter coefficient memory block 48), and means (FIR filter bank 50) for applying a stored impulse response to the input signal. (Although Kitamura does not use the term "impulse response" to refer to the sets of FIR filter coefficients stored in coefficient memory 48, by definition, a set of tap coefficients of an FIR filter constitutes the impulse response of the filter, as was notoriously well known in the art at the time the present invention was made. See column 5, lines 41-51.)

30. Regarding **claim 27**, in normal operation, the apparatus of Kitamura clearly performs the method claimed, according to the description above with regard to claim 32.

31. Regarding **claims 28 and 33**, Kitamura discloses at column 4, lines 14-62 that compression is performed (a gain characteristic is applied to an input signal) according to audio listening environment information and a compression rate that each may be entered by a user (a "manual input"). In other words, the [apparatus] includes a manual input for a gain characteristic to be applied to an input signal and the gain characteristic to be applied to an input signal is thus determined in response to a manual input.

32. Regarding **claim 37**, in normal operation, the apparatus of Kitamura clearly performs the method claimed, according to the description above with regard to claims 32 and 33.

33. Regarding **claims 29 and 34**, Kitamura discloses in Fig. 3 that the apparatus includes means (52) for interpolating between two or more impulse responses (FIR filter coefficient sets) before applying the interpolated response to the input signal, and at column 5, lines 21-30 that an interpolation between two or more impulse responses is made and applied to the input signal.

Art Unit: 2644

34. Regarding **claim 39**, as indicated above regarding claims 32 and 33, the apparatus of Kitamura comprises means for storing data representing a plurality of gain characteristics at a plurality of different levels; means for repeatedly assessing the amplitude of an input signal; means for determining a gain characteristic to be applied to the input signal in response to a manual input; and means for applying the thus determined gain characteristic to the input signal.

35. Regarding **claims 31, 36, 38, and 40**, because the apparatus of Kitamura is itself an audio signal processor, the gain characteristic it applies to an input signal (its gain characteristic) necessarily corresponds to a gain characteristic of an audio signal processor.

36. Regarding **claim 44**, the apparatus of Kitamura (for applying an impulse response to an audio signal) comprises: means (24) for storing data representing a plurality of characteristics of a reference device (see below); characteristics of a reference device; a manual input (column 4, lines 60-62) to select an impulse response (see below) to be applied to an input signal; and means (40) for applying the impulse response to the input signal. The term "reference device" may refer to anything devised or contrived that serves as a standard for measuring or constructing something, such as a prototype upon which a manufactured device is based, a theoretical device upon which a real device is based, or many other definitions. Applicant has not provided any basis, either in the claims or the specification, for determining a specific meaning for the

term. The Fletcher-Munson curves, upon which the impulse response (FIR filter coefficients) of the adaptive filters (50) of Kitamura are based, as disclosed at column 4, line 63 –column 5, line 5, constitute a reference device. Thus, the selectable audio response filter data (26 of Fig. 1), embodied as selectable sets of filter coefficients (48 of Fig. 3) constitute data representing a plurality of characteristics of a reference device that are stored by memory means 24 of Fig. 1. As the apparatus itself can be described as a "reference device" as broadly as disclosed and claimed, the apparatus inherently also comprises characteristics of a reference device. Also, because a gain function constitutes an impulse response (as described above with regard to claim 32 and reference Wilson), the user interface to allow a user to vary the compression rate data, as disclosed at column 4, lines 60-62 of Kitamura, constitutes a manual input to select an impulse response to be applied to the input signal (to the same extent as enabled by Applicant's disclosure).

37. Regarding **claims 45, 47, 50, and 52**, because the limitations of these claims (or equivalent limitations in view of the references being applied) are all contained in claim 29, these claims are rejected by the same reasoning applied to claim 29, recited above.



38. Regarding **claims 49 and 54**, these (duplicate) claims are rejected by the same reasoning applied to claim 29, recited above, with the additional note that the gain characteristic applied by the apparatus of Kitamura inherently corresponds to a gain characteristic of an audio processor, since the apparatus of Kitamura is itself an audio processor.

39. Regarding **claim 51**, as described above with regard to claim 34, Kitamura discloses an apparatus for applying a gain characteristic to an audio signal, comprising means (42 of Fig. 3, in turn comprising filter coefficient memory block 48) for storing data representing a plurality of gain characteristics at a plurality of different levels (column 4, line 63 –column 5, line 5); means for repeatedly assessing the amplitude of an input signal (inherently – see column 4, lines 45-50); means (also comprised in 42 of Fig. 3) for determining a gain characteristic to be applied to the input signal (column 5, lines 6-10); means (50 of Fig. 3) for applying the thus determined gain characteristic to the input signal when the amplitude of the input signal falls between two stored gain characteristics including means for interpolating between these two gain characteristics to produce a gain characteristic to be applied to the input signal (column 5, lines 16-30 and column 6, line 65 –column 7, line 3). Kitamura further discloses at column 4, lines 60-62; column 6, lines 15-19; and column 6, lines 41-47 various manual inputs for gain characteristics to be applied to an input signal.

***Claim Rejections - 35 USC § 103***

40. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

41. **Claims 30, 35, 43, 46, 48, and 53** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura (US 6,055,502) in view of Bose et al. (US 4,490,843).

42. Regarding **claims 30, and 35**, as described above, Kitamura discloses an apparatus that meets the limitations of claim 34 and performs the method of claim 29 in normal operation. Kitamura discloses throughout (e.g., at column 4, lines 2-8) that selectable audio response filter data (stored and/or interpolated impulse responses) are selected and/or determined based on a volume level determined by a "volume control data signal" (20 of Figs. 1-3). Although it is not absolutely clear whether the volume control data is produced automatically or in response to a manual input, both possibilities would have been fairly suggested to one of ordinary skill in the art at the time the present invention was made. Bose et al. disclose a system for applying loudness compensation to an audio signal according a set of frequency response curves selected according to the level of attenuation or gain set by a manual volume control input. Such systems were well known in the art at the time the present invention was made. It would have been obvious to one of ordinary skill in the art at the time the

Art Unit: 2644

present invention was made to derive the volume control signal 20 (which in turn selects an impulse response to be applied to the input signal) of Kitamura from a manual input, as implied by Kitamura, according to common practice in the art as demonstrated by Bose et al.

43. Regarding **claim 43**, the term "reference device" may refer to anything devised or contrived that serves as a standard for measuring or constructing something, such as a prototype upon which a manufactured device is based, a theoretical device upon which a real device is based, or many other definitions. Applicant has not provided any basis, either in the claims or the specification, for determining a specific meaning for the term. The Fletcher-Munson curves, upon which the impulse response (FIR filter coefficients) of the adaptive filters (50) of Kitamura are based, as disclosed at column 3, lines 61-66, constitute a reference device as broadly as disclosed and claimed. Thus, the stored data representing a plurality of impulse responses, as described above regarding claim 30, can be said to relate to a plurality of characteristics of a "reference device", as broadly as claimed and disclosed, and the claim is rejected by the same reasoning applied to presented for claim 30, above.

44. Regarding **claims 46, 48, and 53**, as the limitations of these claims (or equivalent limitations in view of the references being applied) are all contained in claim 30, these claims are rejected by the same reasoning applied to claim 30, as recited above.

***Conclusion***

45. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

46. Kuroki et al. (US 5,841,875), Park et al. (US 5,930,733), Frindle (US 5,923,767) disclose digital audio signal processors that performs interpolation between gain values stored in a table to determine a gain characteristic to be applied to an input signal.

47. Massie (US 5,748,747) discloses a signal processing apparatus for adding harmonic content to digital audio signals, with a general teaching of interpolating between look-up table entries to reduce the size of the table (column 1, lines 37-38).

48. Higashi (US 5,386,082) discloses a method and system for localizing acoustic images that employs interpolation to estimate delay, filtering, and gain parameters between experimentally-determined parameter values stored in memory tables.

49. Lindemann et al. (US 5,744,742) disclose an audio signal synthesizing and processing apparatus and method in which sets of filter coefficients are interpolated.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony M Jacobson whose telephone number is 703-305-5532. The examiner can normally be reached on M-F 11:00-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh N Tran can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*tmj*

tmj  
March 17, 2005



**SINH TRAN**  
**SUPERVISORY PATENT EXAMINER**